Things that go “boom” under water

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What is sound?

Sound is a **Pressure** Wave:

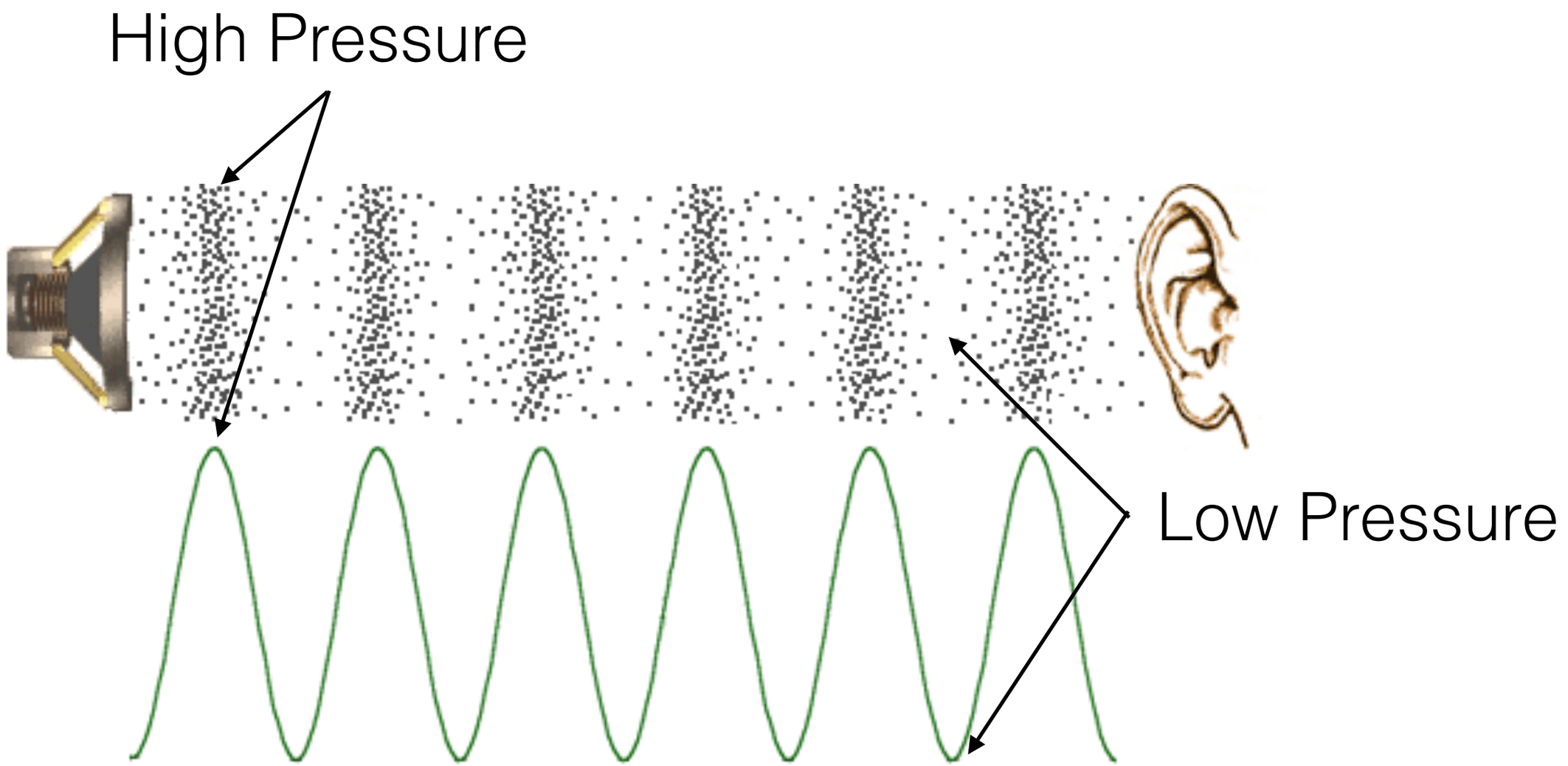
Pressure = Force /Area

https://www.pinterest.com/pin/492440540480776134

http://www.dailymail.co.uk/news/article-2203248/Elephant-stands-legs-eat-tree-leaves.html

Sound is a Pressure **Wave**:

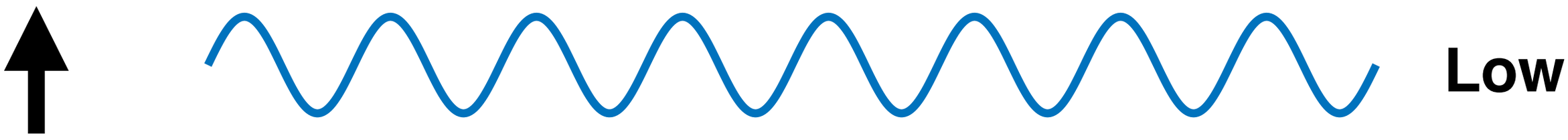
Wave = Traveling oscillation

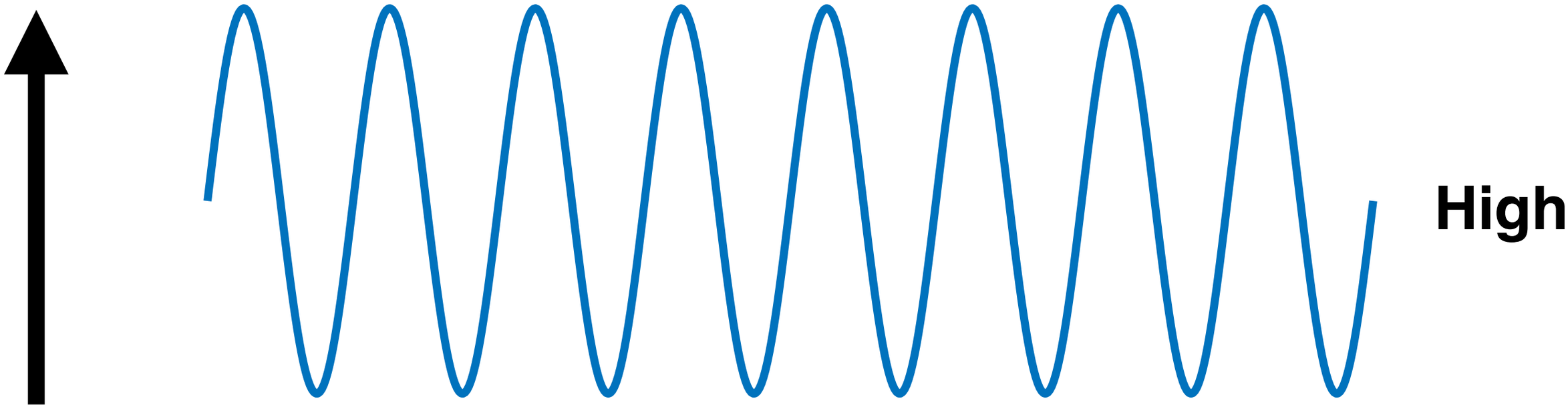


https://www.mediacollege.com/audio/01/sound-waves.html

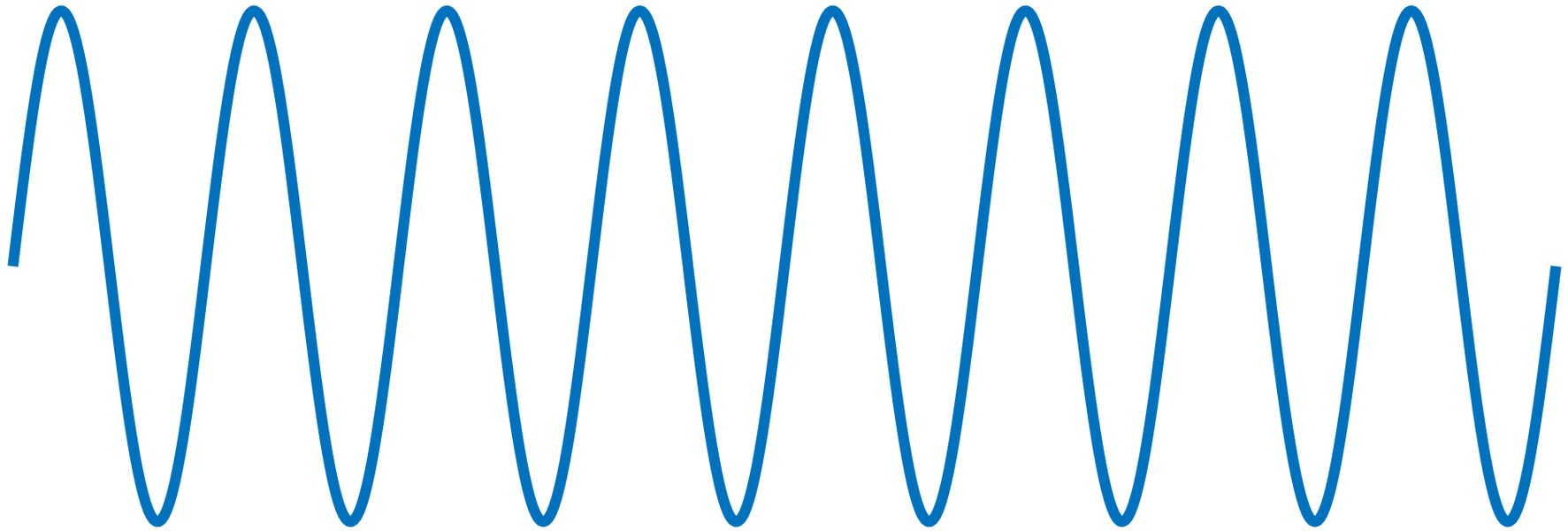
How we describe sound?

Amplitude [height]

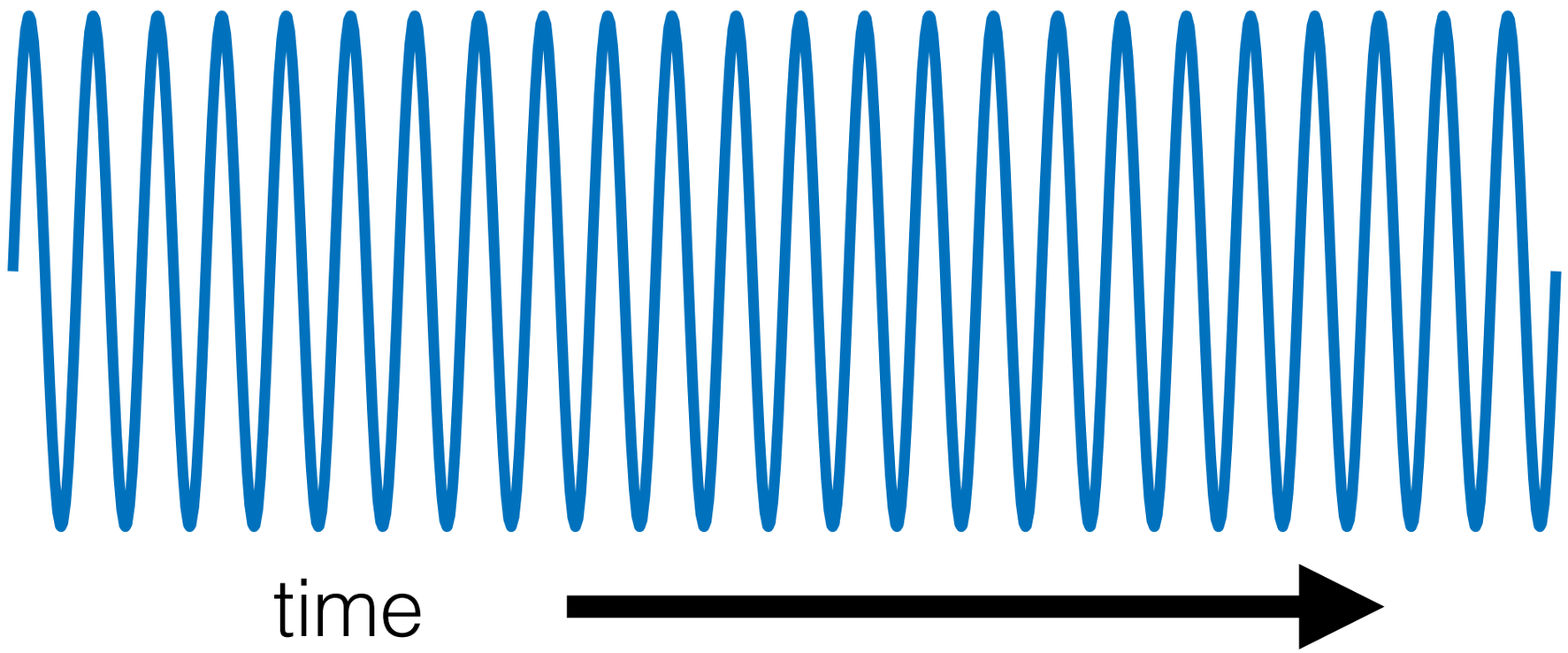




Frequency [time]

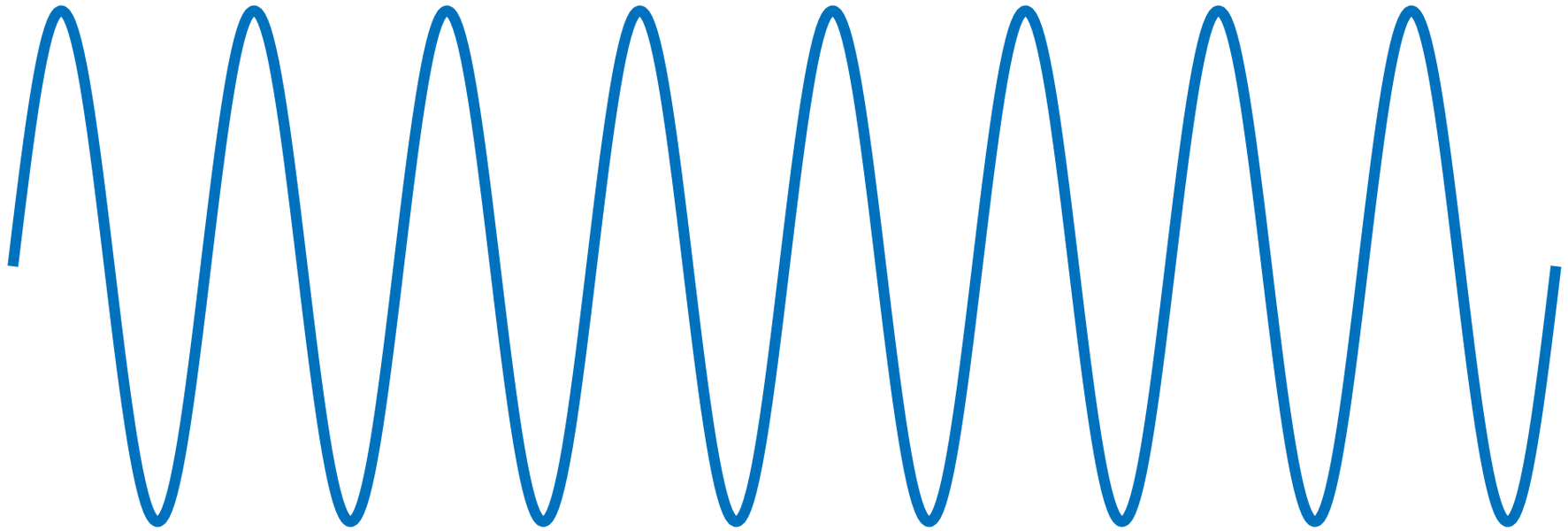


Low

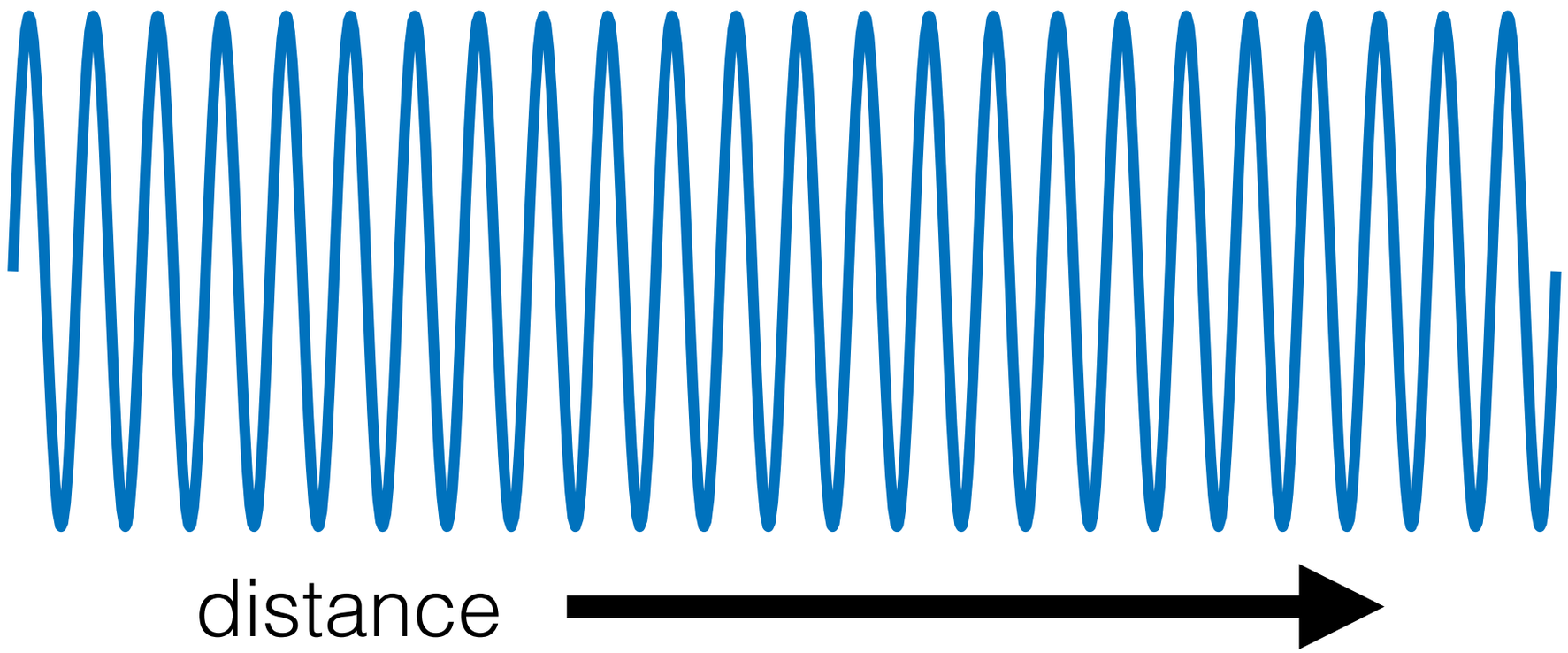


High

Wavelength [distance]



High



Low

What makes sounds?

Some Common Sounds

Frequency & Wavelength: **pitch**

- Humans hear between 20 and 20,000 Hz!
- The rumble of thunder is 100 Hz
- Middle C on a piano is 261 Hz
- A police siren is 1,000 Hz
- Crickets sing at 5,000 Hz

Amplitude: **loudness or volume**

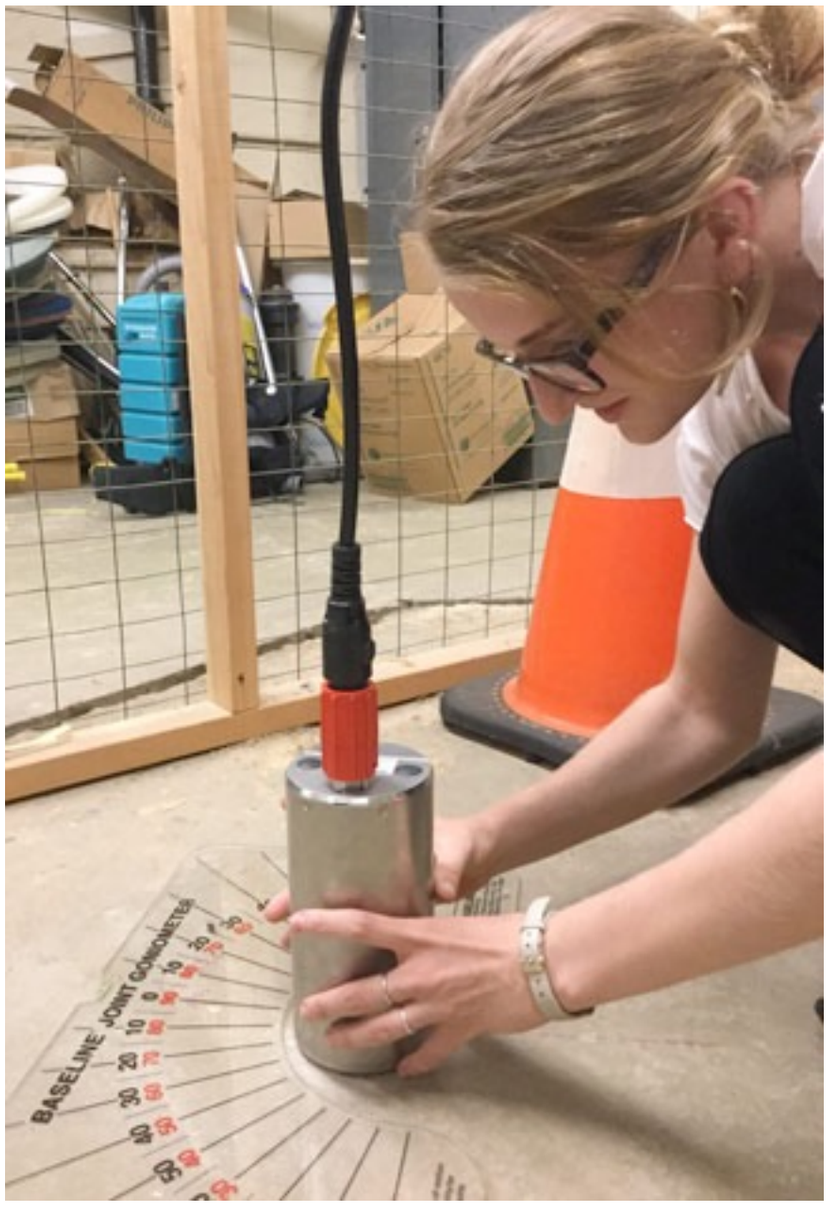
- +10 dB doubles sound volume
- Cats purr at 25 dB
- Normal conversation is 50 dB
- A jet engine is 120 dB
- Saturn V rocket was over 200 dB!

https://en.wikipedia.org/wiki/Saturn_V#/media/File:Apollo_11_Launch2.jpg

Earthquakes make sounds, too

Can you hear an earthquake?

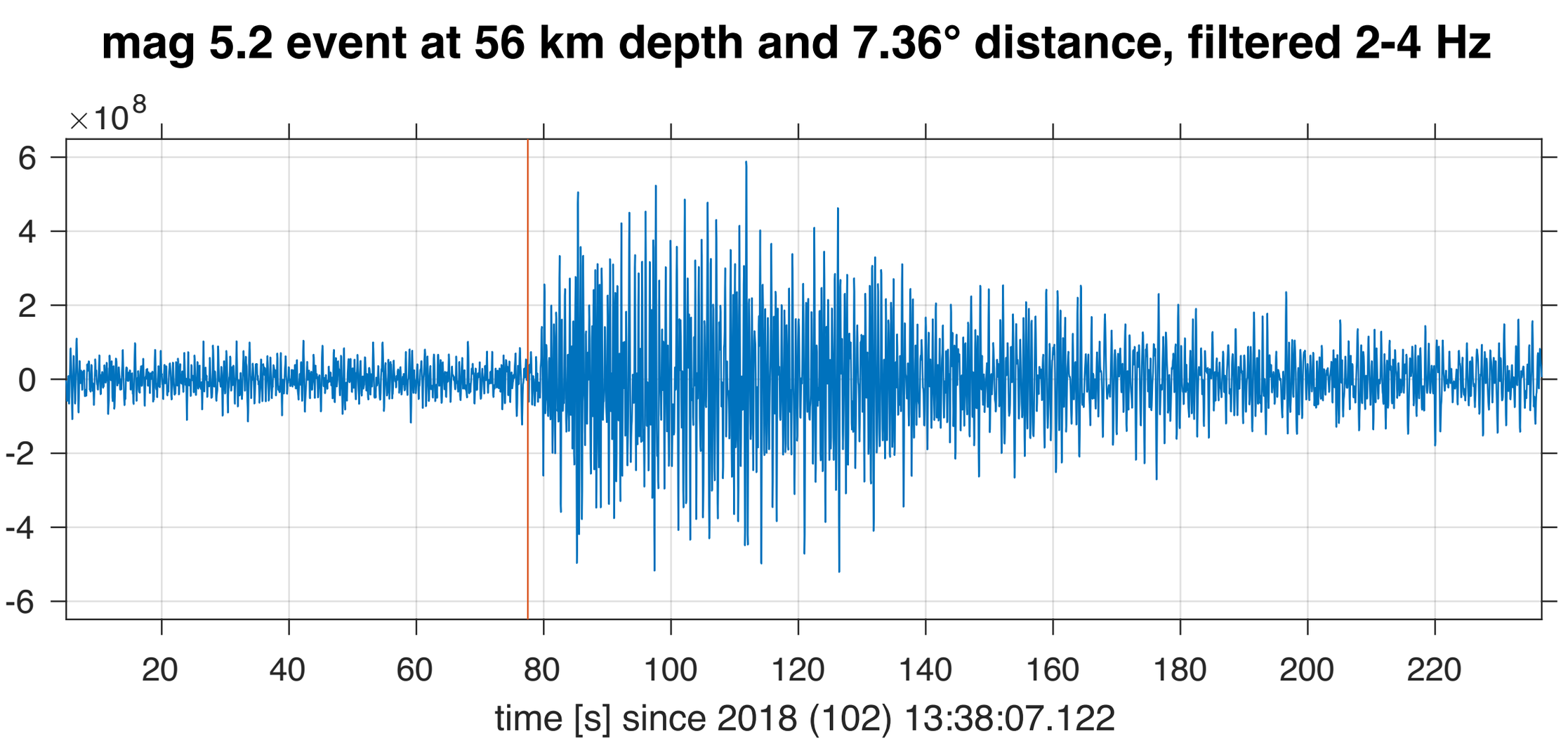
Seismometers hear earthquakes



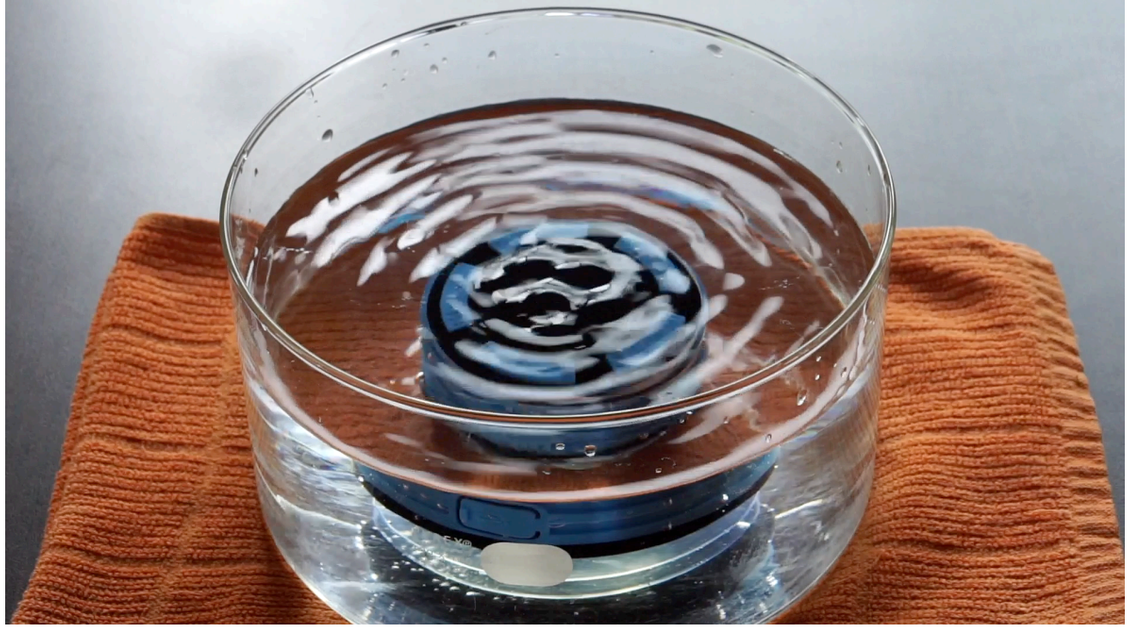
Can you hear under water?

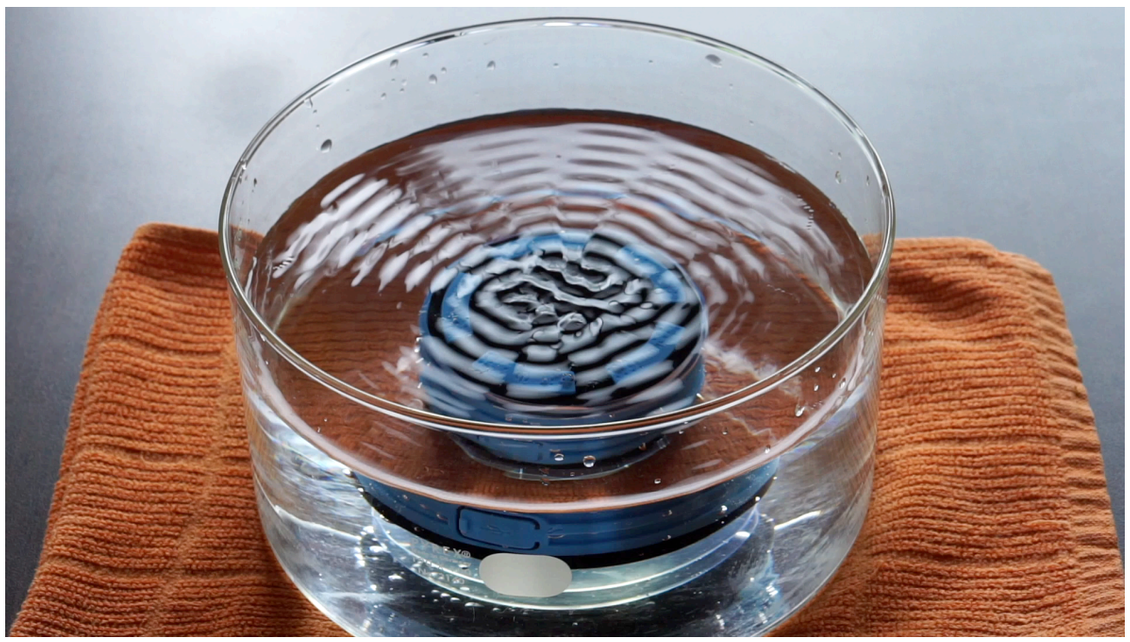
Can you hear an earthquake under water?

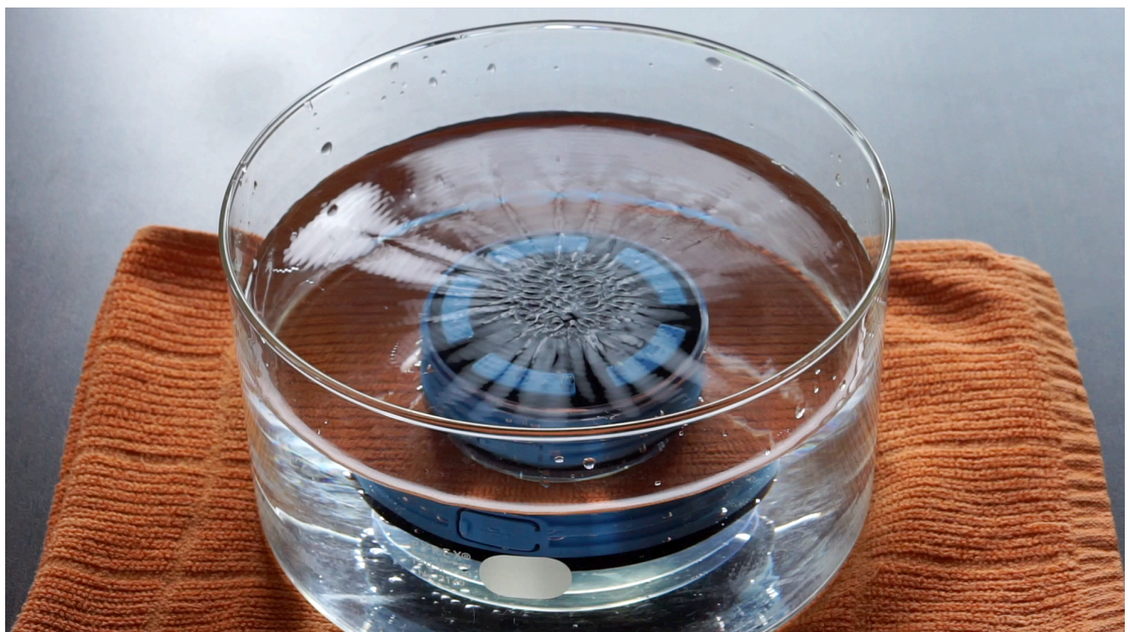
Hydrophones hear earthquakes under water


mag 5.2 event at 56 km depth and 7.36° distance, filtered 2-4 Hz
×10^8
6
4
2
0
-2
-4
-6
20
40
60
80
100
120
140
160
180
200
220
time [s] since 2018 (102) 13:38:07.122

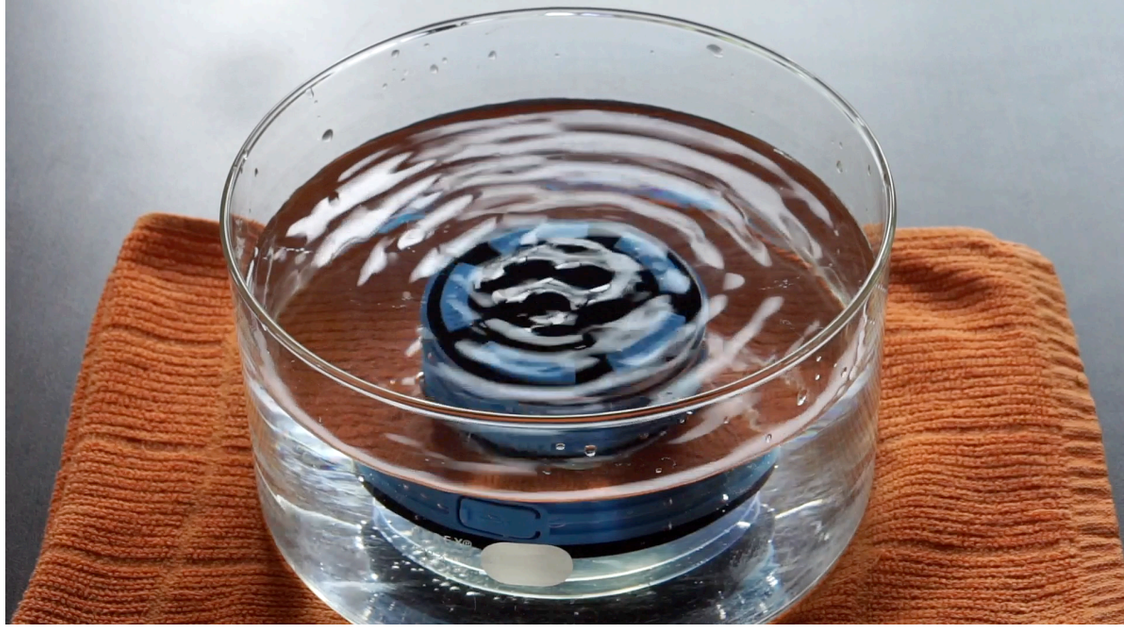
Can you *see* sound in water?



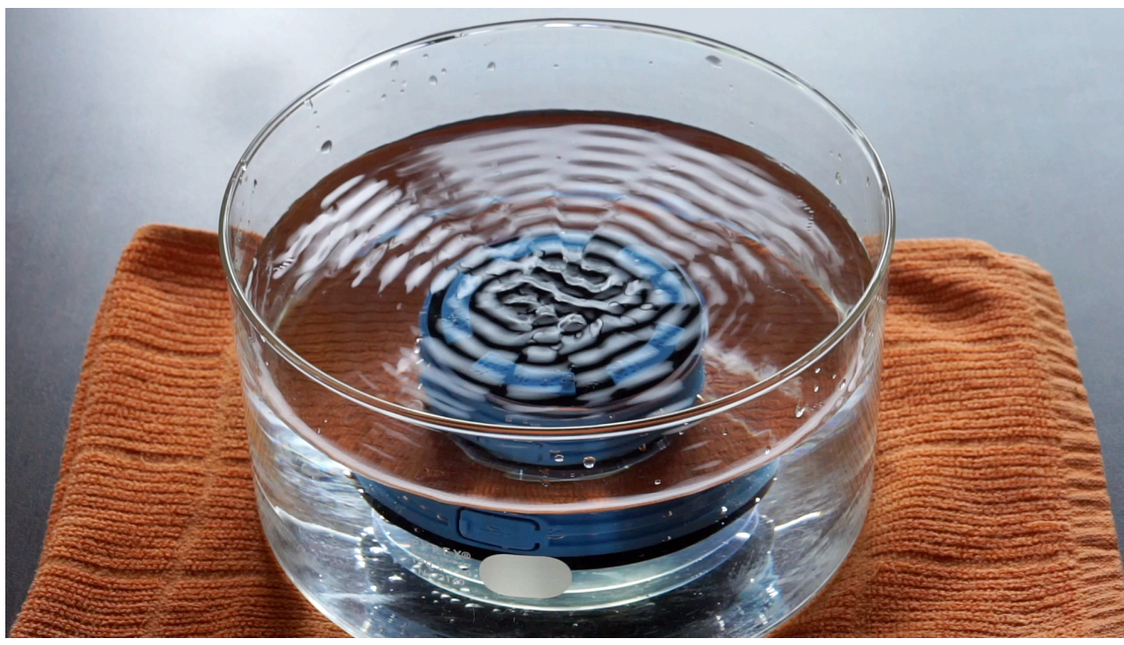
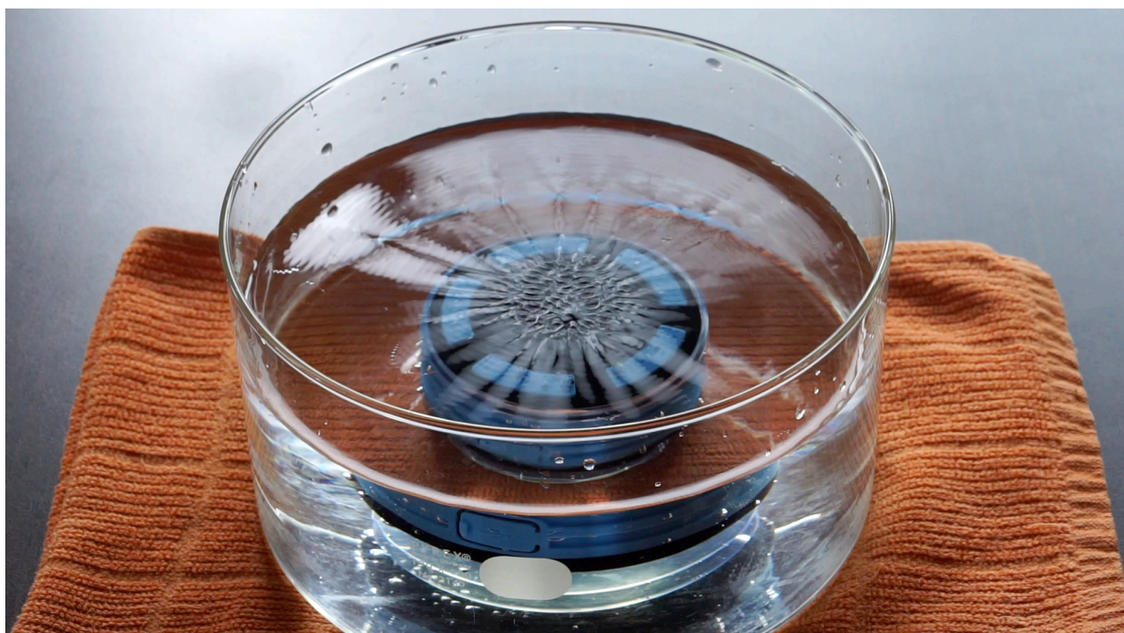
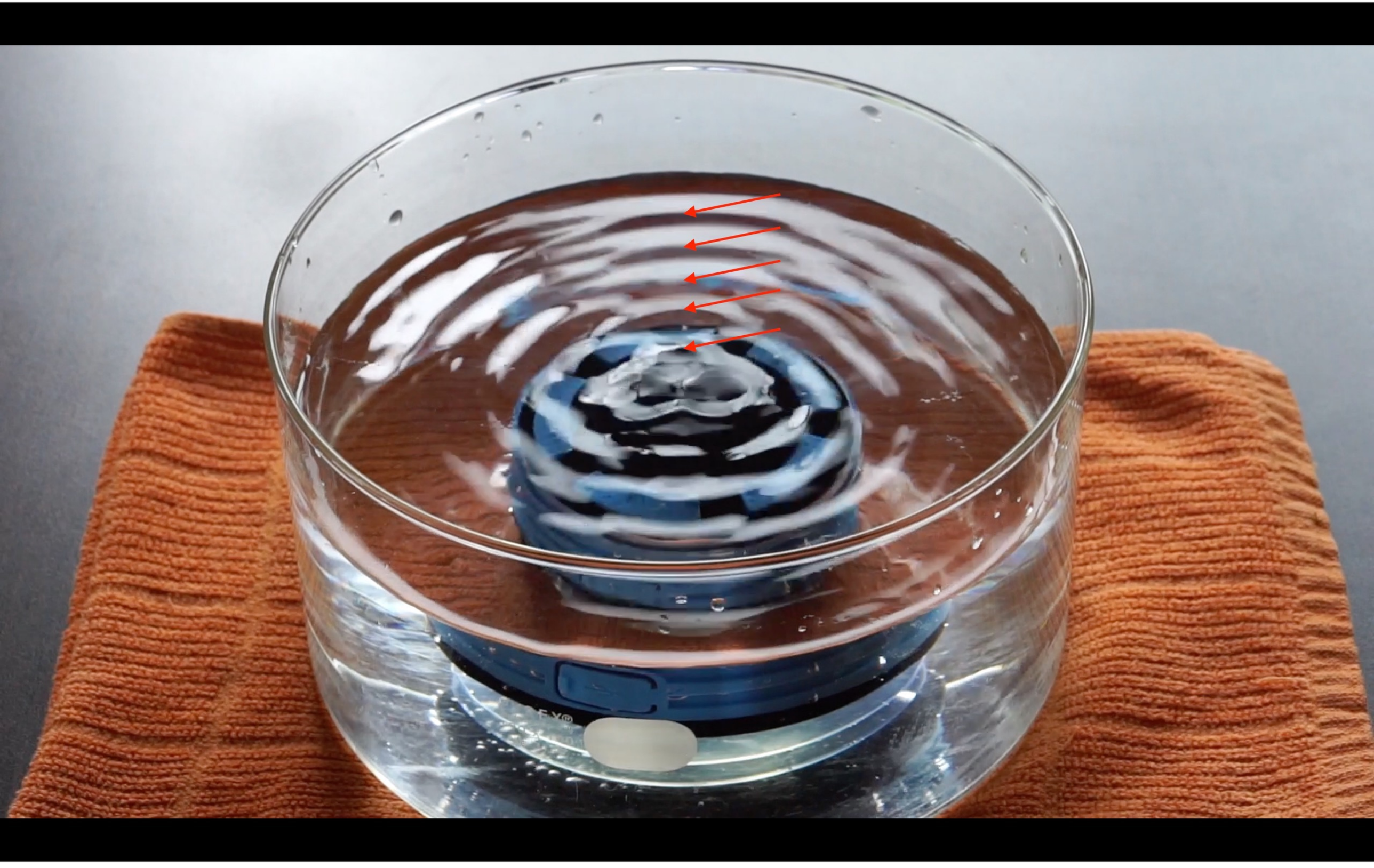
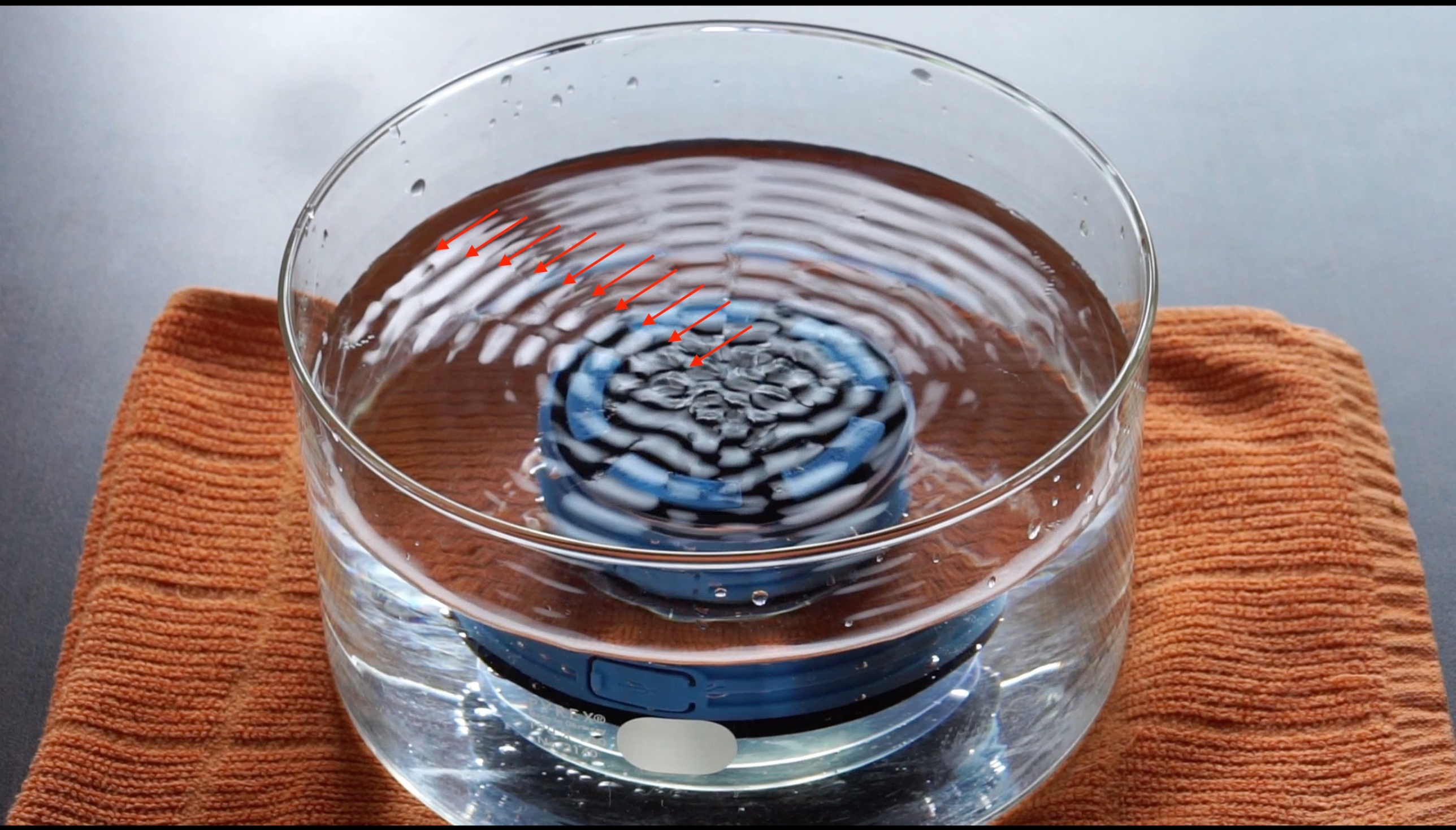
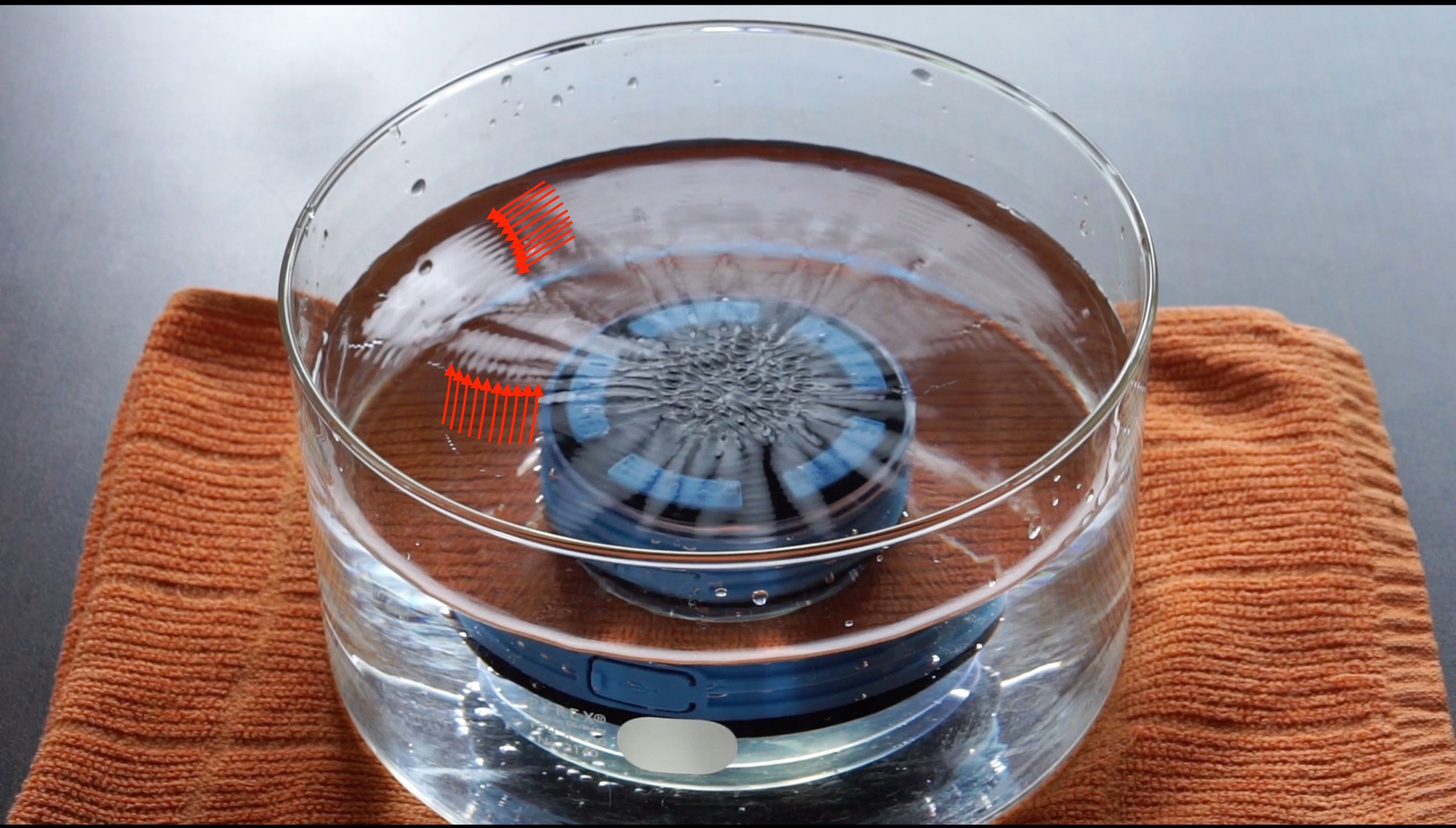




Low: 30 Hz



Mid: 60 Hz



High: 120 Hz